First 5 Minutes — Review Question

GRADE 6 • TOPIC 5 • LESSON 5.2 | 5 points • Work independently

Lesson 5.2 • Generate Equivalent Ratios

Write 12:18 in simplest form.

1. Show each step in your notebook.
2. Explain the operation or rule you used.

Real-Life Connection & Key Concepts

Essential question

How can you find equivalent ratios?

Solve & Discuss It!

Sally mixes 3 pints of yellow paint with 4 pints of red paint to make orange. How much red paint should she mix with 24 pints of yellow for the same shade?

What we will learn

Use multiplication, division and ratio tables to generate equivalent ratios; recognize proportional scaling.

Definitions & rules

Equivalent ratios express the same comparison.

Multiply or divide BOTH terms by the same nonzero number.

In a ratio table, each column preserves the same multiplicative relationship.

Example 1 — Generate Equivalent Ratios

GRADE 6 • TOPIC 5 • LESSON 5.2 | Guided example • Model and explain

Problem

For every 16 basketball players in Crystal County schools, there are 48 soccer players. If there are 64 basketball players at the same ratio, how many soccer players are there?

Worked solution

64 ÷ 16 = 4.

Multiply both terms by 4.

48 × 4 = 192 soccer players.

Multiply or divide both terms by the same nonzero factor to preserve the ratio.

Basketball	16	32	48	64
Soccer	48	96	144	192

Example 2 — Generate Equivalent Ratios

GRADE 6 • TOPIC 5 • LESSON 5.2 | Guided example • Model and explain

Problem

Sarah made 12 baskets in 18 shots. At the same rate, how many baskets will she make in her next 6 shots?

Worked solution

18 ÷ 3 = 6.

12 ÷ 3 = 4.

6:4 is equivalent to 18:12; 4 baskets.

Shots	6	9	18
Baskets	4	6	12

Multiply or divide both terms by the same nonzero factor to preserve the ratio.

Example 3 — Generate Equivalent Ratios

Problem

The circumference-to-diameter ratio is approximately 66:21. Which are equivalent: 22:7, 33:10, 44:14, 88:28?

Worked solution

66:21 ÷ 3 = 22:7.

44:14 = 22:7; 88:28 = 22:7.

33:10 is not equivalent.

Multiply or divide both terms by the same nonzero factor to preserve the ratio.

Circumference	22	44	66	88
Diameter	7	14	21	28

Individual Work

GRADE 6 • TOPIC 5 • LESSON 5.2 | 10 minutes total • 10 points

Complete all five tasks. Show your reasoning.

11. (p. 277) A recipe uses 5 oz of milk for 2 eggs. Complete a ratio table for 2, 4, 6, 8, 10 eggs; find milk for 10 eggs.

12. (p. 277) Write three ratios equivalent to $\frac{6}{7}$.

13. (p. 277) Write three ratios equivalent to $\frac{9}{5}$.

Individual Work — continued

GRADE 6 • TOPIC 5 • LESSON 5.2 | 10 minutes total • 10 points

Finish the remaining problems. Check your work.

14. (p. 277) Write three ratios equivalent to 8:14.

15. (p. 277) Write three ratios equivalent to 7:9.

Individual Work — Answer Key

Multiply or divide both terms by the same nonzero factor to preserve the ratio.

11. (p. 277)

5 oz per 2 eggs; multiply both by 5. 25 oz for 10 eggs. Milk row: 5, 10, 15, 20, 25.

12. (p. 277)

$\frac{6}{7} \times \frac{2}{2,}\ \frac{3}{3,}\ \frac{4}{4} \rightarrow \frac{12}{14,}\ \frac{18}{21,}\ \frac{24}{28}$.

13. (p. 277)

$\frac{9}{5} \rightarrow \frac{18}{10,}\ \frac{27}{15,}\ \frac{36}{20}$.

14. (p. 277)

8:14 → 16:28, 24:42, 32:56.

15. (p. 277)

7:9 → 14:18, 21:27, 28:36.

Group Work

GRADE 6 • TOPIC 5 • LESSON 5.2 | 8 minutes total • 10 points

Work together. Each person must contribute a solution.

16. (p. 277) At a school picnic, fifth graders consumed 6 gal of water and 7 gal of juice. Sixth graders drank 24 gal of water; seventh graders drank 18 gal. If the ratios are equivalent, find each grade's juice consumption.

17. (p. 277) Hybrid cars to total cars: 4:9. Find hybrids if the total is 63 on Saturday; find total if 32 hybrids on Sunday.

Group Work — continued

GRADE 6 • TOPIC 5 • LESSON 5.2 | 8 minutes total • 10 points

Agree on a solution and be ready to explain it.

18. (p. 277) A jar has 32 green and 56 pink jellybeans. If Shiloh shares 7 pink jellybeans at the same ratio, how many green jellybeans should he share? Make a ratio table.

23. (p. 278) A recipe uses 3 egg yolks for 2 tbsp. How many yolks for 8 tbsp? Show a ratio table.

Group Work — Answer Key

GRADE 6 • TOPIC 5 • LESSON 5.2 | Discuss and justify

Multiply or divide both terms by the same nonzero factor to preserve the ratio.

16. (p. 277)

6:7 × 4 = 24:28; × 3 = 18:21. Juice: 28 and 21 gallons.

17. (p. 277)

4:9 × 7 = 28:63; × 8 = 32:72. Saturday 28 hybrids; Sunday 72 total.

18. (p. 277)

32:56 ÷ 8 = 4:7. Share 4 green. Example table: 4:7, 8:14, 16:28, 32:56.

23. (p. 278)

3:2 → 6:4 → 9:6 → 12:8. For 8 tbsp, use 12 yolks.

Exit Ticket

GRADE 6 • TOPIC 5 • LESSON 5.2 | 2 minutes • Independent check

Before you leave, solve this problem.

Find the missing value: 18:24 = 27:□.

Show your work.

Write the answer with the correct units or graph, if needed.